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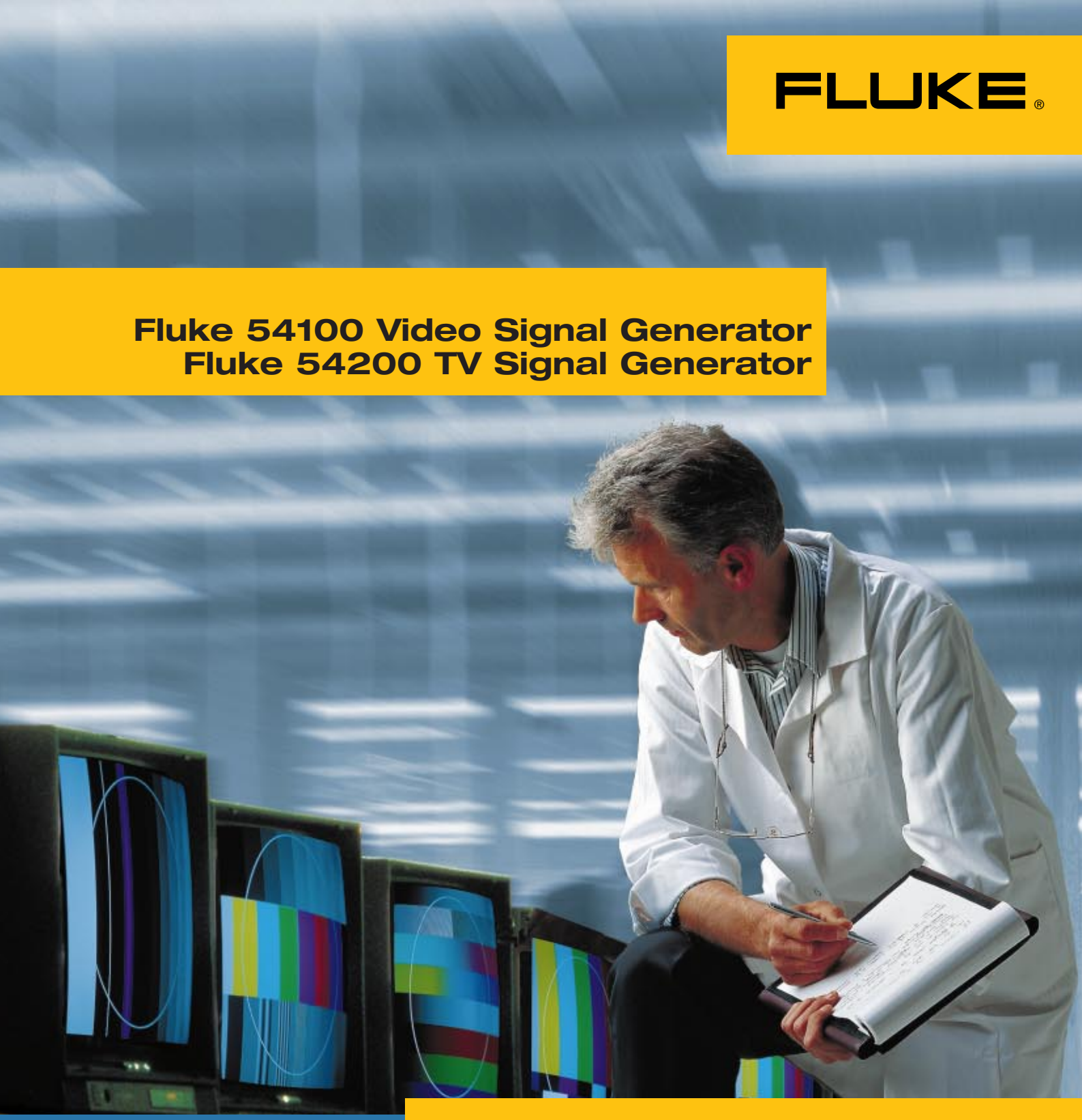
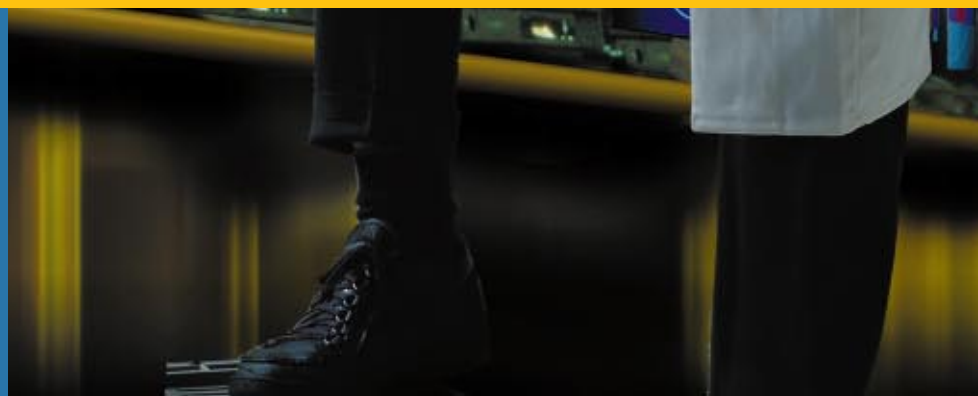
Fluke 54100 Video Signal Generator
Fluke 54200 TV Signal Generator



The purest signals, the widest choice



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It's all you need for accurate multi-standard video and TV signal testing

Meet the 54000 Series from Fluke, a range of easy to use instruments to test TVs, VCRs, set top boxes and other video equipment. According to any video standard. And with today's widest choice of highly accurate signals.

Covers all video standards

- **Meets CCIR, EBU, FCC, ITU and EIA analog television standards**
- **More than 500 digitally generated test patterns for PAL, NTSC and SECAM, including 16:9 and 4:3 aspect ratios**
- **High precision setting and indication for video, chrominance and RF amplitudes**
- **Very stable RF terrestrial output with internal/external modulation, group delay pre-correction and a level up to 100 mV**

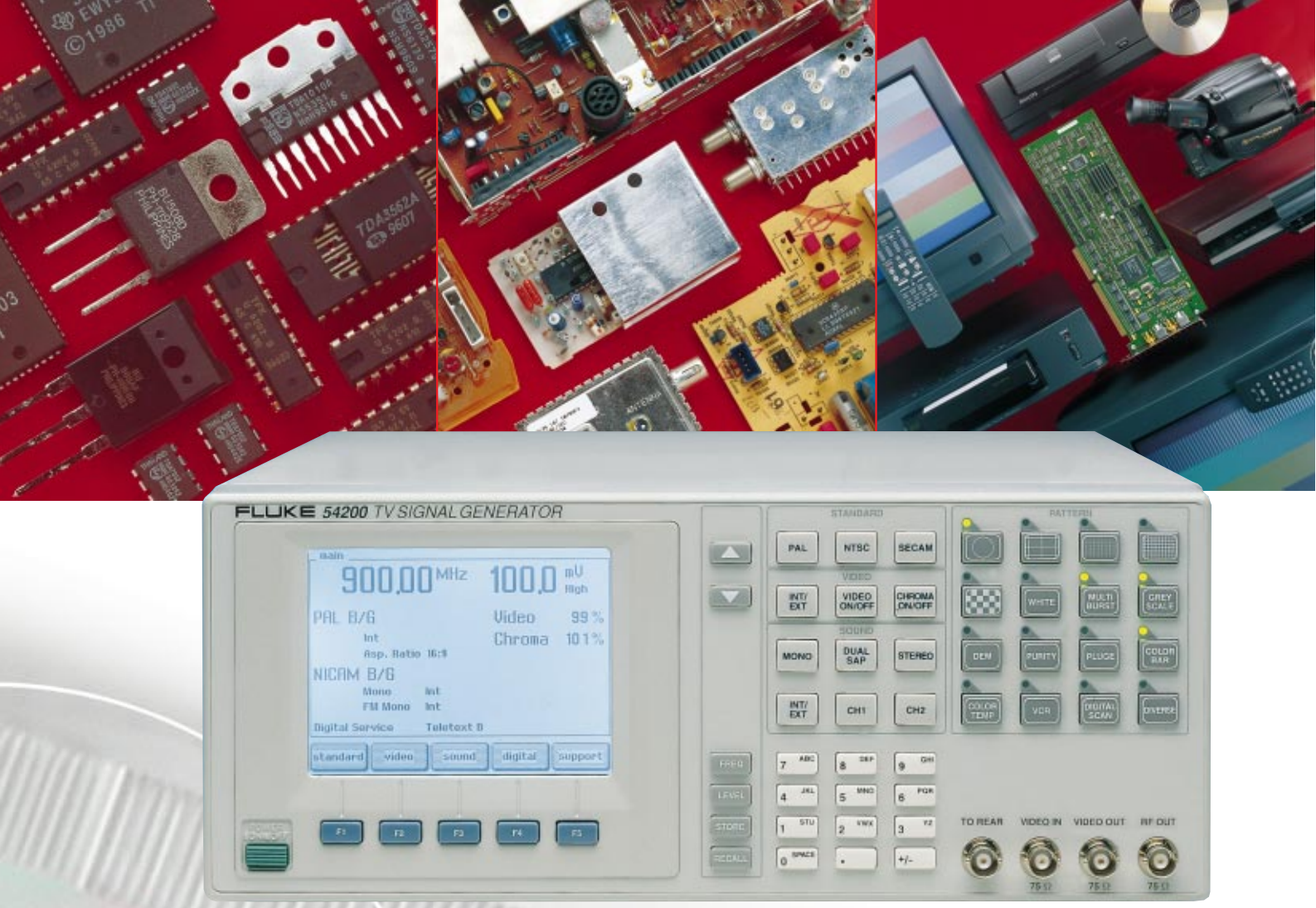
Two models
There are two compact models in the series. The Fluke 54100 Video Signal Generator is the obvious choice for testing video circuitry. The Fluke 54200 TV Signal Generator offers additional sound test signals and a highly stable RF output, making it ideal for complete testing of TV sets, VCRs or other related equipment. Both models offer selectable TV standards (PAL, NTSC, SECAM), text functions and a choice of signal outputs. You can choose from a number of readily available pre-configurations, or select an instrument that precisely matches your testing requirements, specifying options from a range of stereo sound, data services and interface functions. You'll find all details on the separate option and ordering information inserts.

All applications
The digitally generated test signals of the Fluke 54000 Series comply with the recommendations of the CCIR, EBU, FCC, ITU and EIA standards for analog television. This versatility, combined with the high signal quality (stability and purity) makes them ideal for testing TV receivers, VCRs, camcorders, observation systems and set-top decoder boxes, and also for checking the performance of individual sub-assemblies or components used in these products.

Easy to Use
These generators are excellent examples of Fluke's reputation for easy-to-use instruments:

- Select the main functions directly on the front-panel keyboard. More advanced functions can be accessed using soft keys and the large LCD (Liquid Crystal Display) with its familiar graphical interface.
- Accurately set luminance and chrominance amplitudes with the up and down keys or the numerical keyboard.
- Store up to 99 different test situation settings for later instantaneous recall.
- Finally, to make it even more convenient, a number of country specific settings have been pre-programmed. Just think of the time this will save you.

Just what you need
Whether you work in development, production, quality assurance, installation, maintenance or repair, there's always a model to suit your needs, thanks to the standard capabilities of these instruments, together with the range of options. Their ease of use and compact size makes them ideal, both for personal use on the bench and for use by a group of engineers. Need to make automated measurements? It's simple with the Fluke 54000 Series, as you can remotely control *all* functions via the optional combined IEEE-488 (GPIB) and RS-232 interface.



Multi or single standard
The Fluke 54100 Video Signal Generator and the Fluke 54200 TV Signal Generator are available with PAL, NTSC and/or SECAM video standard options. You can select any combination of these standards to create a single, double or triple standard unit. The appropriate sub standards (system B, D, G, I, K, K1, L, M or N) are enabled automatically.

Wide range of patterns
The Fluke 54000 Series are today's most versatile generators. On all models you will find the test patterns and capabilities you'll need to test and align the total video signal path. There are over 500 test patterns – for calibrating geometry (in 4:3 and 16:9 aspect ratios), synchronization, focusing, static and dynamic convergence. You'll find signals for checking bandwidth, interference (such as cross-color), amplitude response, tracking and clipping. As well as for color reproduction, cut-off setting, high-voltage stability, analog-to-digital conversion, and much more. And your test results will always be reliable, as all test patterns are digitally generated to ensure high stability and precise timing.

Stable RF output (Fluke 54200 only)
You need to do tuner and IF tests? The terrestrial output on the Fluke 54200 TV Signal Generator is just what you need. Its highly stable signal covers the entire RF frequency range from 32 to 900 MHz. And you can set the frequency directly with 50 kHz resolution. For fast and precise reference, you can enter the amplitude either in mV or dBµV and the maximum output level is as high as 100 mV for the entire bandwidth. Group delay pre-correction, also known as group delay filtering, allows you to test applications that need accurate luminance and chrominance timing.

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Technical Specifications

Fluke 54100 Video Signal Generator

Fluke 54200 TV Signal Generator

OUTPUTS

CVBS VIDEO

Voltage (Vpp in 75Ω):	1V (nominal setting)
Setting range:	0 to 1.5V
Tolerance:	5%, 2% for nominal setting at reference temperature
Resolution:	10 mV
Impedance:	75Ω
Polarity:	Positive, negative
Coupling:	DC

CVBS SYNC, LINE SYNC and FIELD SYNCHRONISATION

Voltage (Vpp in 75Ω):	2V
Tolerance:	0.3V
Impedance:	75Ω
Polarity:	Negative
Coupling:	DC

EURO AV CONTROL VOLTAGES

Aspect Ratio:	Automatically or off
Fast Blanking:	Automatically or off

TERRESTRIAL RF CARRIER (54200 only)

Frequency:	32 to 900 MHz
Tolerance:	10 kHz
Resolution:	50 kHz
Spectral purity:	≤ -60 dBc inside actual TV channel ≤ -30 dBc outside actual TV channel
Voltage (Vrms in 75Ω):	100 mV for high range 10 mV for low range
Attenuation:	0 to 80 dB for high range 0 to 60 dB for low range
Readout:	mV, dBµV
Resolution:	0.01 mV for voltage ≤ 10 mV 0.1 mV for voltage > 10 mV 1 dB for dBµV indication
Tolerance:	3 dB
Flatness:	≤ 2 dB for 32 to 900 MHz
Impedance:	75Ω
Modulation:	Double sideband AM Internal, external
Group delay:	2 different types (or off)

INPUTS

VIDEO IN (54200 only)

Voltage (Vpp):	1V (nominal)
Impedance:	75Ω
Polarity:	Positive
Coupling:	DC

VIDEO

SYNCHRONISATION

Reference:	CCIR Rep. 624-4, 1990 ANSI/ SMPTE 170M-1994
System:	625 lines (50 Hz) 525 lines (59.94 Hz)
Line frequency:	15.625 kHz for 625 line system 15.734265 kHz for 525 line system
Tolerance:	3 ppm for +5 to + 45 °C 1 ppm at reference temperature
Aging:	≤ 2 ppm per year
Level:	-43% for 625 line system -40 IRE for 525 line system
Tolerance:	3% for 625 line system 3 IRE for 525 line system

LUMINANCE

Reference:	CCIR Rep. 624-4, 1990 ANSI/ SMPTE 170M-1994
Blanking level:	0% (0 IRE)
Black level:	0% for 625 line system +7.5 IRE for 525 line system
White level:	100% (100 IRE)
Tolerance:	2% for 625 line system 2 IRE for 525 line system

CHROMINANCE

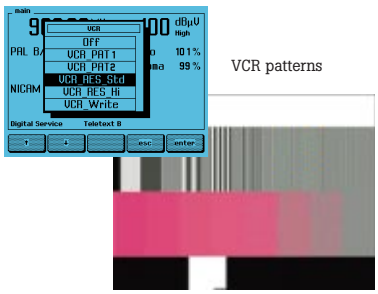
Reference:	CCIR Rep. 624-4, 1990 ANSI/SMPTE 170M-1994
System:	PAL B, D, G, I, K, M, N NTSC M NTSC with 4.433619 MHz SECAM B, D, G, K, K1, L
Carrier frequency:	4.433619 MHz for PAL B, D, G, I, K and NTSC 4.43 3.575611 MHz for PAL M 3.582056 MHz for PAL N 3.579545 MHz for NTSC M 4.406250 and 4.250000 MHz for SECAM
Tolerance:	3 ppm for +5 to +45 °C 1 ppm at reference temperature
Aging:	≤ 2 ppm per year
Phase tolerance (PAL/NTSC):	2°, 1° at reference temperature
Level:	100% (nominal setting)
Setting range:	0% to 150%
Resolution:	1%

Values stated without tolerances are typical values

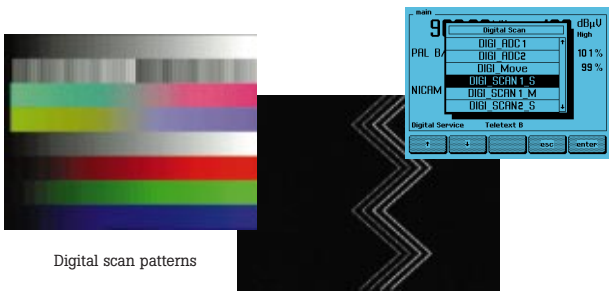
Technical Specifications (cont.)

PATTERNS

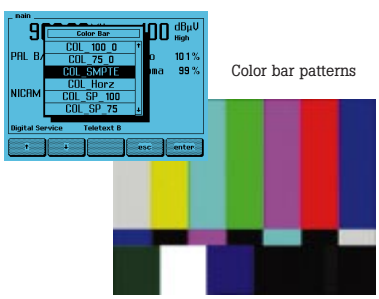
Reference:	ITU Rec. 471-1/1994 and SMPTE EG27-1994 for color bar SMPTE EG1-1990 for SMPTE color bar CCIR Rec. 473-5, 1990 and CCIR Rec. R26-1981 for IRS 17 CCIR Rec. 473-5, 1990 for multi burst CCIR Rep. 1221 for PLUGE
Aspect ratio:	4:3, 16:9
Circle:	4 additional circles in 16:9 mode
Center cross:	With border castellations (overscan indication selectable between 2% or 3%)
White:	0, 5, 15 to 100% (5% steps) for 625 line system 7.5, 15 to 100 IRE (5 IRE steps) for 525 line system
Purity:	Red, green, blue, cyan, magenta, yellow, white, black (100/0/75/0 for 625 line system and 100/7.5/75/7.5 for 525 line system)
Dots:	17x13 dots in 4:3 mode, 23x13 dots in 16:9 mode With center indication
Crosshatch:	18x14 lines in 4:3 mode, 24x14 lines in 16:9 mode With center and top/left indication (selectable)
Checkerboard:	12x9 squares in 4:3 mode, 16x9 squares in 16:9 mode
PLUGE:	-1.6, 0, 1.6, 100% for 625 line system 4.8, 7.5, 10.7, 100 IRE for 525 line system
Grey scale:	10 steps linear staircase
VCR:	VCR test (2 types) Resolution test (2 types) Writing current
Multi burst:	0.5, 1.0, 2.0, 4.0, 4.8, 5.8 MHz for 625 line system 0.5, 1.0, 2.0, 3.0, 3.58, 4.2 MHz for 525 line system With time intervals
Digital scan:	ADC check (2 types) Moving block Progressive scan check (3 types)
Color bar:	75/0/75/0, 100/0/75/0, 75/0/100/25, 100/0/100/25 for 625 line system 75/7.5/75/7.5, 100/7.5/75/7.5 for 525 line system SMPTE color bar Horizontal color bar (75/0/75/0 for 625 line system and 75/7.5/75/7.5 for 525 line system)
DEM:	Demodulator test (2 types)
Color temperature:	3 different sizes with adjustable levels for center and border
Diverse:	EHT test (Reference rectangle with switching white/black window) IRS 17 (Available as full field test pattern as well as reference line 17, only for 625 line system)
Pattern combination:	Circle with every other pattern (except progressive scan) or combination Center cross / crosshatch / dots / purity Grey scale / white / multi burst / color bar



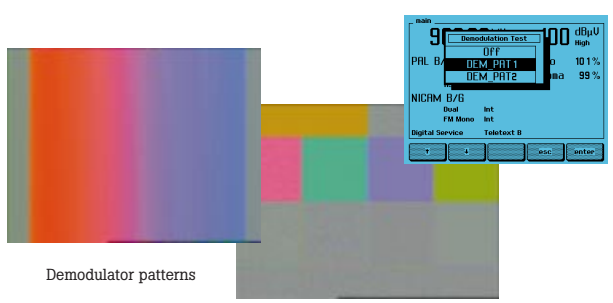
VCR patterns



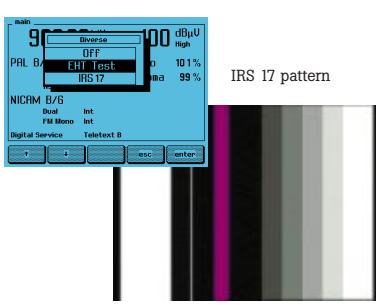
Digital scan patterns



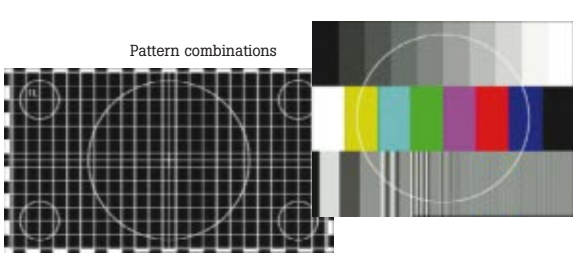
Color bar patterns



Demodulator patterns



IRS 17 pattern



Pattern combinations

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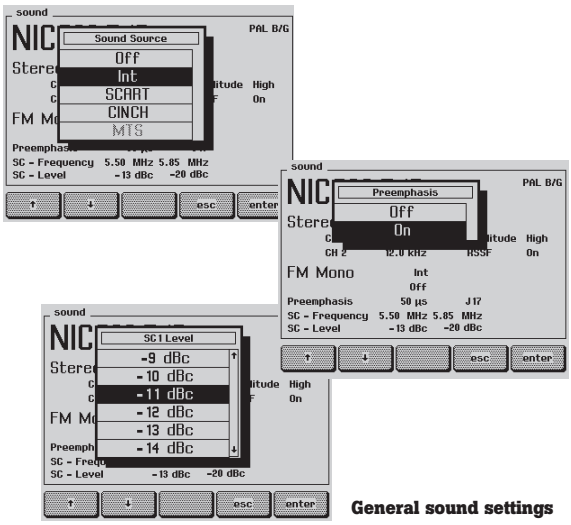
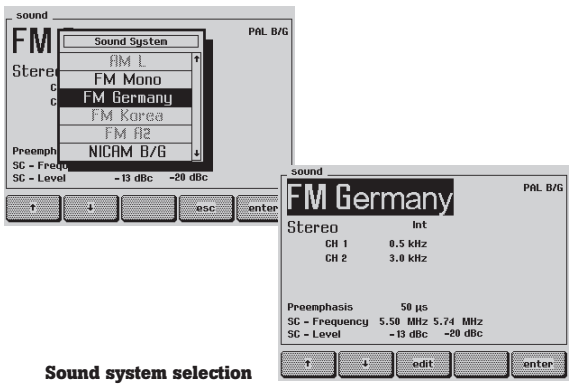
That sounds just right....



General sound settings



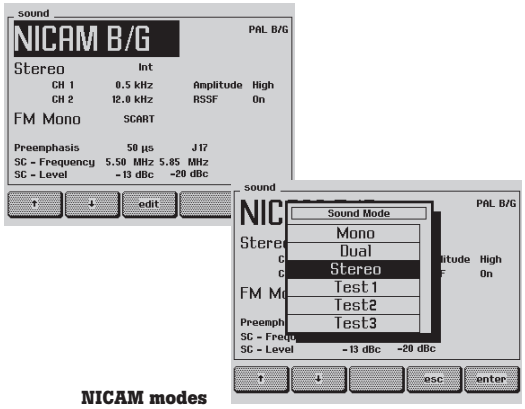
Sound system selection

Push-button mono sound test signals
To help you test the mono sound capabilities of TV receivers and VCRs, standard audio test signals are available with every selected stereo sound option on the Fluke 54200 TV Signal Generator. Several tone frequencies allow you to test the complete path for audio sound. Operation is simple, as you can select the main sound test functions directly on the front panel. More specific settings, such as sound carrier level, frequency and pre-emphasis, can be modified via soft keys.

Multi-system analog stereo
The analog stereo option supports various two-carrier analog stereo systems, including BG, A2 and Mk stereo. The B and G stereo systems are often referred to as German or 'Zweiton' stereo. A2 stereo is used in combination with both SECAM and PAL television standards. It is transmitted in several eastern European countries and is also known as PAL/SECAM system DK stereo. Mk is a two-carrier NTSC stereo sound system and is used in Korea. For all these two-carrier stereo systems, the analog stereo option generates the appropriate pilots and delivers tone frequencies in mono, stereo or dual mode. Tone frequencies of 0.5, 1.0 and 3.0 kHz are included and for system M and N the lowest frequency is 0.3 kHz. Using these analog sound functions, you can test a variety of audio parameters, such as channel separation, signal to noise and harmonic distortion. All signals are generated digitally, to ensure high signal stability and purity.

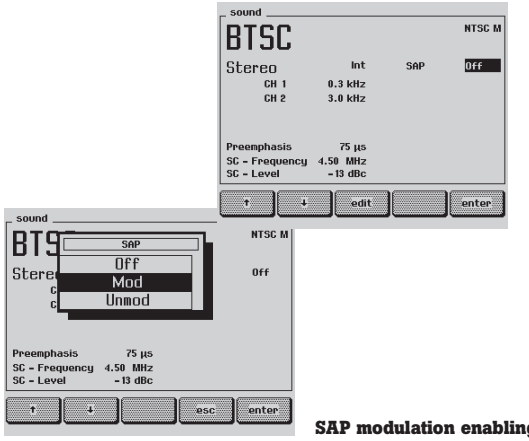
- Analog stereo containing German, Korean and DK stereo
- NICAM stereo
- BTSC sound test signals (MTS Stereo plus SAP)

Versatile NICAM digital sound
If you need digital sound capabilities, you should specify this option. NICAM, also available in SECAM, is compatible with the existing PAL terrestrial TV and cable TV standards, and adds two high-quality digital sound channels. Suitable TV sets can receive two mono channels (this is called dual channel) for simultaneous translation of foreign-language programs, stereo signals or transparent transmission of data. The option provides mono, stereo and dual tone modes to check the digital sound performance. For channel 1, tone frequencies of 0.5, 1.0, 1.5 and 3.0 kHz are available, while you can modulate channel 2 with a signal frequency of 1.0, 1.5, 3.0 and 12 kHz. Both digital sound channels have selectable low- or high-amplitude signals to test the NICAM expander of the TV receiver. You can check the operation of the QPSK demodulator and NICAM decoder with three special test signals. You can also use these to perform a level adjustment or measurement. A high/low selectable RSSF (Reserve Sound Switching Flag) indicates that the analog (mono) and digital sound carriers are transmitting different information, or that there are errors in the digital transmission.



NICAM modes

BTSC sound (MTS Stereo plus SAP)
In combination with NTSC and PAL TV standards, this sound option generates BTSC sound signals or Multi channel Television Sound (MTS). Apart from mono and stereo sound, a Second Audio Program (SAP) is also available. You can select various test tone frequency (0.3, 1.0 and 3.0 kHz) and mode combinations, as well as special test signals. These special test signals give you an easy functional test for channel separation, signal to noise ratio, level gaining and harmonic distortion of the stereo and SAP decoders. All sound signals are digitally generated which ensures high stability, and they are available both at the RF output or, via baseband processing, at the precision MPX output.



SAP modulation enabling

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Technical specifications

OUTPUTS
SOUND CARRIER

Voltage (Vpp in 50Ω):	142 mV for mono carrier and system B, G 200 mV for mono carrier and system D, I, K, K1, L, M, N 63.2 mV for stereo and NICAM (system B, D, G, I, K) carrier 28.3 mV for NICAM (system L) carrier
Setting range:	112.5 to 356 mV for mono carrier 28.3 mV, 35.6 mV, 63.2 mV for stereo and NICAM carrier
Tolerance:	2 dB
Resolution:	1 dB
Impedance:	50Ω
Connector:	BNC rear

AUDIO and EURO AV

Voltage (Vrms in open circuit):	500 mV
Tolerance:	5%
Impedance:	600Ω
Connector:	Cinch rear, EURO AV rear

BTSC MPX and FM STEREO PILOT

Voltage (Vrms in open circuit):	550 mV
Tolerance:	5%
Impedance:	600Ω
Connector:	BNC rear

NICAM DATA and NICAM CLOCK

Frequency:	728 kHz
Tolerance:	3 ppm for +5 to +45°C 1 ppm at reference temperature
Aging:	≤ 2 ppm per year
Voltage (Vpp in 50Ω):	1V
Tolerance:	10%
Impedance:	50Ω
Connector:	BNC rear

INPUTS
AUDIO, EURO AV and MTS

Voltage (Vrms):	500 mV (nominal)
Impedance:	0.1 MΩ
Connector:	Cinch rear, EURO AV rear, BNC rear

MONO
SOUND CARRIER

Frequency:	4.5 MHz for system M, N 5.5 MHz for system B, G 6.0 MHz for system I 6.5 MHz for system D, K, K1, L
Tolerance:	3 ppm for +5 to +45°C 1 ppm at reference temperature
Aging:	≤ 2 ppm per year
Level:	–13 dBc for system B, D, G, K, K1 –10 dBc for system I, L, M, N
Setting range:	–5 to –15 dBc
Tolerance:	2 dB at reference temperature
Resolution:	1 dB

MODULATION

Frequency:	0.5, 1.0, 3.0 kHz for system B, D, G, I, K, K1, L 0.3, 1.0, 3.0 kHz for system M, N
Type:	FM for system B, D, G, I, K, K1, M, N AM for system L
Deviation:	27 kHz for system B, D, G, I, K, K1 13.5 kHz for system M, N
Tolerance:	5%
Pre–emphasis:	50 µs for system B, D, G, I, K, K1 75 µs for system M, N
Modulation depth:	54% for system L

STEREO
SOUND CARRIER 1

Data:	As Mono

SOUND CARRIER 2

Frequency:	5.7421875 MHz for system B, G 6.2578125 MHz for system D, K (A2) 4.724 MHz for system Mk
Tolerance:	3 ppm for +5 to +45°C 1 ppm at reference temperature
Aging:	≤ 2 ppm per year
Level:	–20 dBc
Setting range:	–20, –25, –27 dBc
Tolerance:	3 dB at reference temperature

MODULATION

Frequency:	0.5, 1.0, 3.0 kHz for system B, D, G, K 0.3, 1.0, 3.0 kHz for system Mk
Type:	FM
Deviation:	27 kHz for system B, D, G, K 13.5 kHz for system Mk
Tolerance:	5%
Pre–emphasis:	50 µs for system B, D, G, K 75 µs for system Mk

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Technical specifications (cont.)

IDENTIFICATION

Reference:	CCIR Rec. 707
Frequency:	f_H / 133 for stereo and system B, D, G, K f_H / 105 for stereo and system Mk f_H / 57 for dual
Tolerance:	3 ppm for +5 to +45°C 1 ppm at reference temperature
Aging:	≤ 2 ppm per year
Type:	AM
Modulation depth:	50%
Tolerance:	5%

NICAM STEREO SOUND CARRIER 1

Data:	As Mono

SOUND CARRIER 2

Frequency:	5.85 MHz for system B, D, G, K, L 6.875 MHz for system D, K 6.552 MHz for system I
Tolerance:	3 ppm for +5 to +45°C 1 ppm at reference temperature
Aging:	≤ 2 ppm per year
Level:	–20 dBc for system B, D, G, I, K –27 dBc for system L
Setting range:	–20, –25, –27 dBc
Tolerance:	3 dB at reference temperature

MODULATION

Reference:	NICAM–728 CCITT Rec J17
Frequency:	0.5, 1.0, 1.5, 3.0 kHz for channel 1 1.0, 1.5, 3.0, 12 kHz for channel 2 Demodulator pattern Decoder pattern Unmodulated carrier
Type:	QPSK
Mode:	Mono, Dual, Stereo, Test
Bit–rate:	728 kbits/s
Tolerance:	3 ppm for +5 to +45°C 1 ppm at reference temperature
Aging:	≤ 2 ppm per year
Level:	High, low
RSSF:	On, off

BTSC STEREO SOUND CARRIER

Frequency:	4.5 MHz for system M, N
Tolerance:	3 ppm for +5 to +45°C 1 ppm at reference temperature
Aging:	≤ 2 ppm per year
Level:	–10 dBc
Setting range	–5 to –15 dBc
Tolerance:	2 dB at reference temperature
Resolution:	1 dB

MODULATION

Frequency:	0.3, 1.0, 3.0 kHz for channel 1 1.0, 3.0 kHz for channel 2 (3.1 and 8.0 kHz in Test modes) 5.0 kHz for SAP (0.3 and 1.0 kHz in Test modes)
Type:	FM with BTSC base band
Base band:	Main channel Identification pilot Stereo sub channel SAP sub channel
Base band type:	FM modulated (BTSC compressed) for stereo sub channel AM modulated with suppressed carrier (BTSC compressed) for SAP subchannel
Mode:	Mono, stereo, SAP
Tolerance:	5%
Pre–emphasis:	75 µs

IDENTIFICATION

Frequency:	f_H
Tolerance:	3 ppm for +5 to +45°C 1 ppm at reference temperature
Aging:	≤ 2 ppm per year

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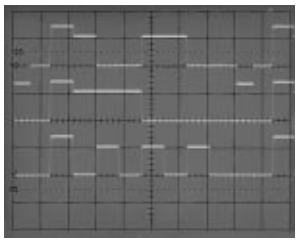
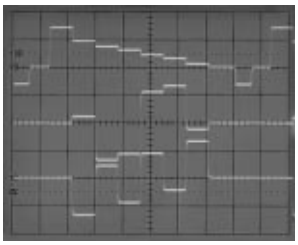
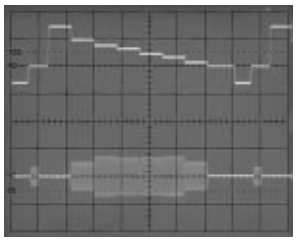
Making the right connections



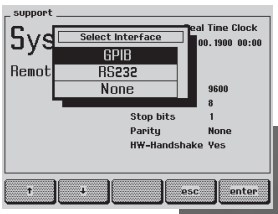
RGB signals

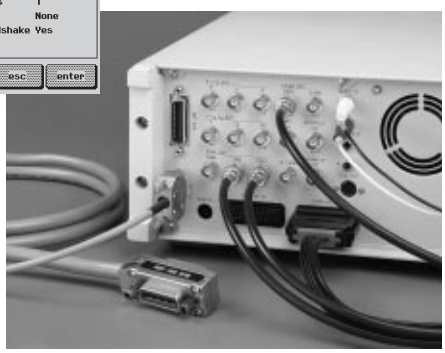


YCrCb signals



YC signals





Fully programmable via IEEE-484 and RS-232

Multiple outputs

For some measurements, a composite video signal is not enough. So, the Fluke 54000 Series' RGB, YC and YCrCb option gives you additional separate output signals for red, green and blue (RGB), luminance (Y), chrominance (C) and component outputs Cr and Cb. The RGB and YC signals are available at separated connectors and on the EURO AV (SCART) connector. The RGB signal is ideal to control devices such as components or subassemblies directly at color decoded level. You can even include synchronization signals in the individual RGB signals. You'll need the YC output signals – which are also provided via a special connector and cable – for testing the S-VHS/Hi-8 input of video recorders. These VCRs eliminate cross-color effects by separately processing the Y and C signals, which gives better color reproduction. The component outputs Cr and Cb (also known as R-Y and B-Y) are phase related to U and V ($U = 0.49 \times Cb$, $V = 0.88 \times Cr$). These component signals are used in the professional video area and in applications where color conversions or pattern processing are tested.

Fully programmable

You can include the Fluke 54000 Series generators in an automated test environment with the interface option. Offering a combined IEEE-488 and RS-232 interface, this option makes the instrument fully programmable from a remote location. The IEEE-488 interface often forms the basis of fully automated test environments, while the RS-232 serial interface is mostly used to control the instrument economically from a PC in a stand alone application. All the instrument's standard, function and mode settings can be changed or retrieved via the IEEE-488 or RS-232 interface.

Interface options

- RGB, YC (S-VHS/Hi-8), YCrCb output signals available
- Fully programmable via combined IEEE-488 and RS-232 interface

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Technical specifications

RGB OUTPUTS

Voltage (Vpp in 75Ω):	700 mV
Tolerance:	5% 2% at reference temperature
Impedance:	75Ω
Polarity:	Positive
Coupling:	DC
Blanking level:	0V
Offset:	± 200 mV
Synchronisation:	Selectable in R, G, B or off (only for BNC outputs)
Connector:	BNC rear, EURO AV rear

YC OUTPUTS

Luminance voltage (Vpp in 75Ω):	1V
Tolerance:	5% 2% at reference temperature
Coupling:	DC
Blanking level:	0V
Offset:	± 200 mV
Chrominance level:	100%
Tolerance:	5% 2% at reference temperature
Impedance:	75Ω
Polarity:	Positive
Coupling:	AC
Connector:	S-VHS rear, EURO AV rear

YCrCb OUTPUTS

Voltage (Vpp in 75Ω):	700 mV
Tolerance:	5% 2% at reference temperature
Impedance:	75Ω
Polarity:	Positive
Coupling:	DC
Blanking level:	0V
Offset:	± 200 mV
Connector:	BNC rear

IEEE-488 INTERFACE

Allows selection and control of all functions

Reference:	ANSI/IEEE Std. 488-1987
Compatibility:	IEEE-488.2-1987
Interface functions:	AH1, SH1, L4, T6, RL1, SR1, DC1
Connector:	Amphenol rear (RFI/EMI shielded)

RS-232 INTERFACE

Allows selection and control of all functions

Command set	As IEEE-488 interface
Baud rate:	110 to 19200
Data bits:	7, 8
Stop bits:	1, 2
Parity check:	Odd, even, no
Handshake:	Software, hardware
Connector:	9 pin D-type rear (male)

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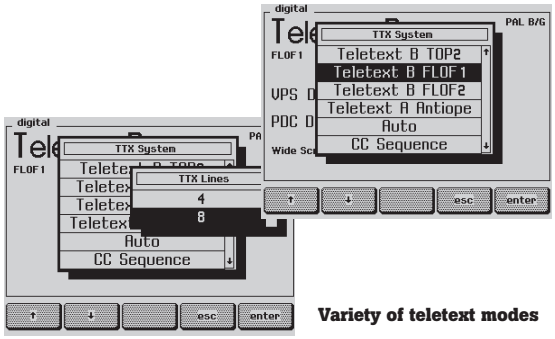
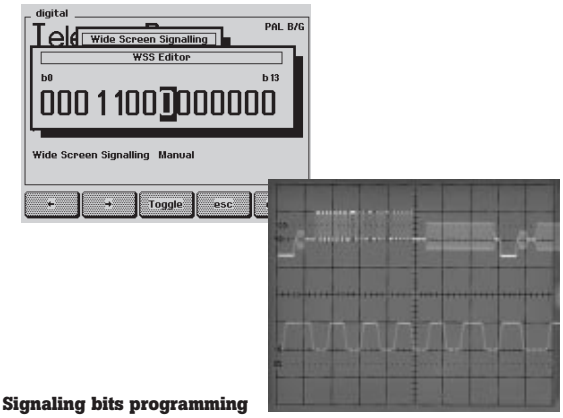
Reading between the lines



Variety of teletext modes



Wide Screen Signaling bits programming

Powerful teletext capabilities

With this data services option, you add powerful teletext test capabilities to your Fluke 54000 Series instrument to meet the highly specialized requirements for checking and aligning teletext receivers and decoders. You will have a selection of over ten teletext pages with special contents for decoder testing at your disposal, for use with the PAL and/or SECAM standards. This option also supports Wide Screen Signaling (WSS) and includes Didon Antiope teletext signals as well as test facilities for FLOF (Full Level One Features), TOP (Table Of Pages) and VPT (Video Programming by Teletext).

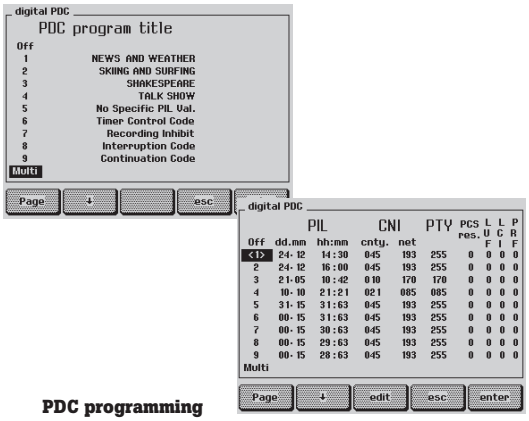
Wide Screen Signaling support

The need for additional signaling has increased substantially, because of the variety of broadcast transmissions and television set capabilities. The Wide Screen Signaling (WSS) bits are present in line 23 of the video signal and contain information about the aspect ratio, audio and data services of the transmission. With WSS, which is included with the teletext option, your Fluke 54000 Series generator automatically transmits the appropriate signaling according to the generator setting. In manual mode, you can program the WSS bits independently to set them to your specific requirements.

- Teletext (TOP, FLOF and VPT)
- Wide Screen Signaling (WSS) bits support
- Easy programmable Program Delivery Control (PDC) and Video Program System (VPS) test functions
- Closed Caption (line 21 data services) testing

Easily programmable PDC and VPS

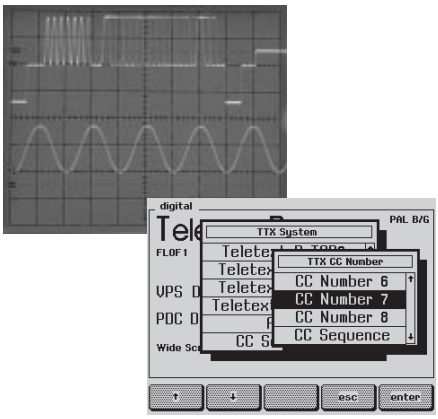
PDC and VPS test facilities are available optionally with the teletext option. Both systems use control information transmitted with the program to start and stop recording of that program on a VCR. For optimum flexibility, you can use any of nine coded PDC or VPS signals and both types of signal can even be transmitted simultaneously. When testing PDC, you can program PIL (date & time), CNI (country & network), PTY, PTL and the program name. You can even test multi labeling. In VPS mode, you can set information on date, transmission time, country indication, TV channel, stereo/dual/mono sound, adult/general program content and the program name. Special PDC and VPS signals such as timer control code, recording inhibit/terminate code, interruption code and continuation code are also available. Programming of the codes for both PDC and VPS is simple, using the instrument's large display and softkeys.



PDC programming

Versatile Closed Caption testing

Closed Caption is also known as line 21 data services for NTSC. It is a visual representation of the information that is simultaneously transmitted on the audio part of a television signal. In the USA, TV sets with screen sizes of 13" and up must have a Closed Caption decoder. Closed Caption is not only used in NTSC countries such as the USA, Korea and Japan, but it can be and is used with the PAL standard as well. The Closed Caption option on the Fluke 54000 Series offers you both caption and text modes in one of four operating channels. It provides eight factory pre-coded Closed Caption memories with a selection of different types of information and modes, such as roll-up, pop-on and paint-on. All line 21 decoder capabilities can easily be tested, as memory 9 is an automatic Closed Caption sequence of memories 1 to 8.



Selecting the Closed Caption content

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Technical specifications

WSS

Reference:	ETSI, ETS 300 294, November 1994 PALplus system description, Revision 3.0, January 1994 Rec. ITU-R BT.1119
System:	625 line system
Data line:	23 (field 1)
Signalling method:	Bi-phase coding, NRZ-L
Clock frequency:	5 MHz
Tolerance:	3 ppm for +5 to +45 °C 1 ppm at reference temperature
Aging:	≤ 2 ppm per year
Level:	500 mV for '1' at 700 mV maximum video level Black level for '0'
Tolerance:	5% for '1' 3% of sync amplitude for '0'

PDC

Reference:	EBU SPB 459 Revision 2 Specification of the domestic video Program Delivery Control system February 1992
System:	TELETEXT UK (CCIR system B)
Programming:	All parameters
Labeling:	Single, multi

VPS

Reference:	Technische Richtlinie ARD/ZDF Nr. 8 R 2 Video Program System EBU SPB 459 Revision 2 Specification of the domestic video Program Delivery Control system February 1992
System:	625 line system
Data line:	16
Signalling method:	Bi-phase modulation
Clock frequency:	5.0 MHz
Tolerance:	3 ppm for +5 to +45 °C 1 ppm at reference temperature
Aging:	≤ 2 ppm per year
Level:	500 mV for '1' at 700 mV maximum video level Black level for '0'
Tolerance:	5% for '1' 3% of sync amplitude for '0'
Programming:	All parameters

CLOSED CAPTION

Reference:	FCC 47 CFR Part 15 Report No: E-7709-C Draft EIA-608
System:	525 line system 625 line system
Data line:	21 (field 1 and field 2)
Signalling method:	Binary NRZ
Clock frequency:	503.4965 kHz for 525 line system 500 kHz for 625 line system
Tolerance:	3 ppm for +5 to +45 °C 1 ppm at reference temperature
Aging:	≤ 2 ppm per year
Level:	50 IRE (50%) for '1' 0 IRE (0%) for '0'
Tolerance:	5 IRE for '1' 1 IRE for '0'
Operation mode:	CC1 to CC4 T1 to T4

TELETEXT DIDON ANTIOPE
(CCIR system A)

Reference:	CCIR Rec. 653-1 CCIR Doc. 11/345-E
System:	625 line system
Data line:	20, 21, 333, 334
Signalling method:	Binary NRZ
Clock frequency:	6.203125 MHz
Tolerance:	3 ppm for +5 to +45 °C 1 ppm at reference temperature
Aging:	≤ 2 ppm per year
Level:	7/3 of sync amplitude for '1' Black level for '0'
Tolerance:	0 to -10% for '1' 3% of sync amplitude for '0'

TELETEXT UK (CCIR system B)

Reference:	CCIR Rec. 653-1 CCIR Doc. 11/282-E
System:	625 line system
Data line:	13, 14, 20, 21, 326, 327, 333, 334 for 8 line mode 20, 21, 333, 334 for 4 line mode
Signaling method:	Binary NRZ
Clock frequency:	6.9375 MHz
Tolerance:	3 ppm for +5 to +45 °C 1 ppm at reference temperature
Aging:	≤ 2 ppm per year
Level:	66% of the difference between black level and peak white level Black level for '0'
Tolerance:	6% for '1' 2% of sync amplitude for '0'

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Ordering Information

Fluke 54200 TV Signal Generator, including RF Output and Analog Sound	Multi standard				Dual Standard							Single standard					
	PAL, NTSC, SECAM				PAL, NTSC				PAL, SECAM			PAL		NTSC		SECAM	
	54200M01/nnn	54200M02/nnn	54200M03/nnn	54200M04/nnn	54200PN1/nnn	54200PN2/nnn	54200PN3/nnn	54200PN4/nnn	54200PS1/nnn	54200PS2/nnn	54200PS3/nnn	54200P01/nnn	54200P02/nnn	54200N01/nnn	54200N02/nnn	54200S01/nnn	54200S02/nnn
RF Output 32....900 MHz	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
Analog stereo sound	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
Teletext, PDC, VPS	●				●				●			●				●	
Closed Caption	●					●								●			
Nicam Sound	●	●										●				●	
BTSC Sound	●	●				●								●	●		
RGB, Y/C, YCrCb, IEEE, RS-232	●	●	●		●	●	●		●	●		●	●	●	●	●	●

Fluke 54100 Video Signal Generator	Multi standard			Dual Standard					Single standard						
	PAL & NTSC & SECAM			PAL & NTSC			PAL & SECAM		PAL		NTSC		SECAM		
	54100M01/nnn	54100M02/nnn	54100M03/nnn	54100PN1/nnn	54100PN2/nnn	54100PN3/nnn	54100PS1/nnn	54100PS2/nnn	54100P01/nnn	54100P02/nnn	54100N01/nnn	54100N02/nnn	54100S01/nnn	54100S02/nnn	
Teletext & PDC & VPS	●			●			●		●				●		
Closed Caption	●				●						●				
RGB & Y/C & YCrCb & IEEE & RS-232	●	●		●	●	●	●	●	●	●	●	●	●	●	

Operating manual languages and line cord options
(replace '/nnn' in above typenumbers by the following)

linecord:	**European**	**US-style**	**UK-style**	**Swiss**	**Australian**
user manual language:					
English	/001	/003	/004		/008
French	/011	/013			
German	/021			/025	

Example: "Fluke 54100PN1/025" is the ordering code for a 54100 Video Signal Generator that supports the PAL and NTSC standards, provides Teletext, PDC and VPS data services, is equipped with RGB, Y/C and YCrCb optional outputs and an IEEE and an RS-232 remote control bus, that is delivered with a Swiss line cord and a user manual in the German language.

Included with the instrument

Fluke 54200	Fluke 54100
User Manual 54200	User Manual 54100
Line cord	Line cord
Cable SCART – SCART	Cable SCART – SCART
Cable SCART – 3 * Cinch male	Cable SCART – 3 * Cinch male
RF cable BNC – IEC-169-2	Y/C Cable (only with Y/C output)
Adaptor IEC-169-2 – F-male	Statement of Calibration Practices
Y/C Cable (only with Y/C output)	
Statement of Calibration Practices	

Rackmount

For mounting the generator in a 19" rack, an optional rackmount kit Fluke 54091 is available. Front height is 3 HE (133.5 mm).

Calibration Certificate

As a standard, a 'Statement of Calibration Practices' is delivered with every instrument.
On request, a Certificate of Calibration, stating calibration data, will be included at a nominal fee.

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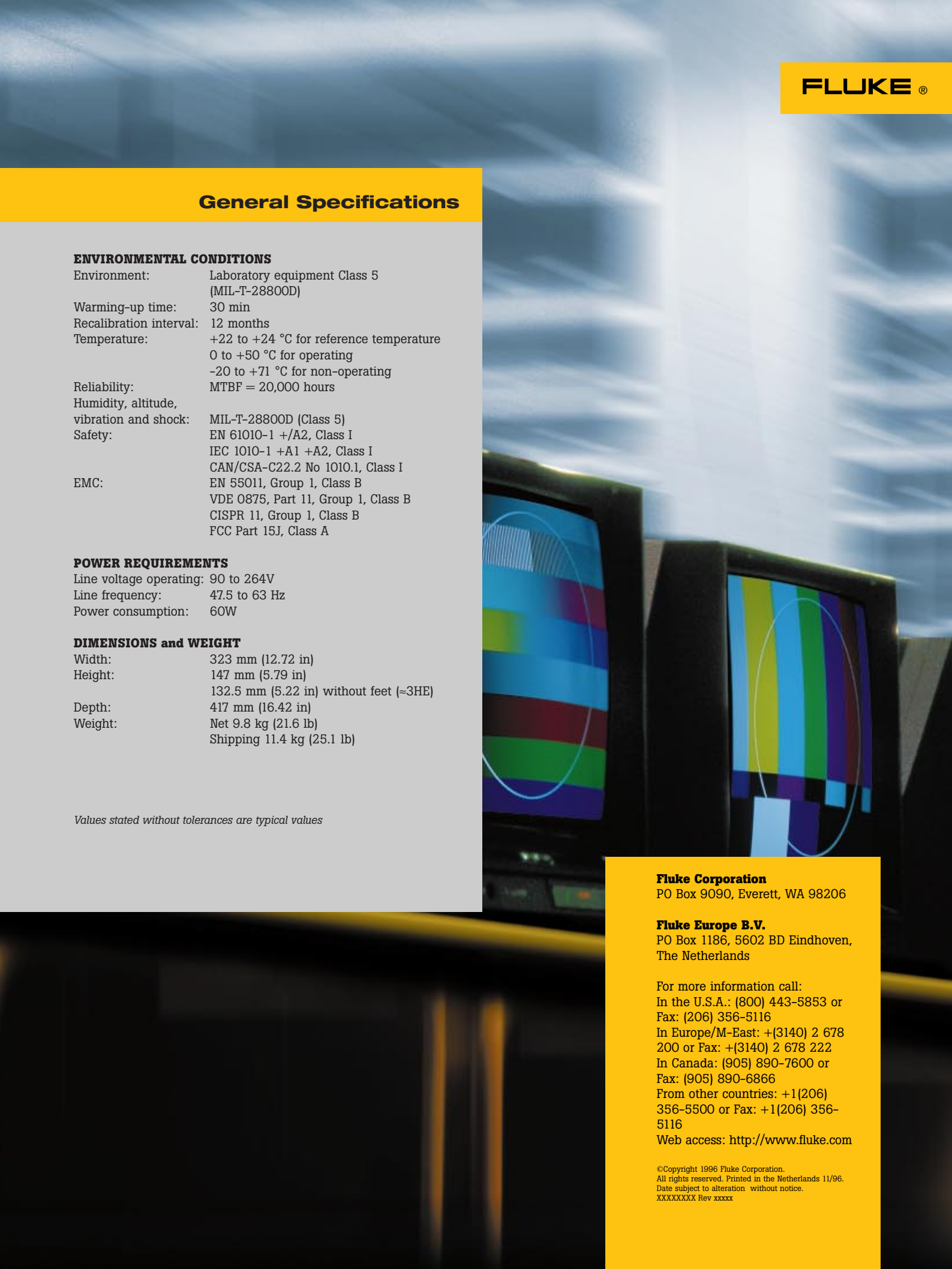

FLUKE®

General Specifications

ENVIRONMENTAL CONDITIONS

Environment:	Laboratory equipment Class 5 (MIL-T-28800D)
Warming-up time:	30 min
Recalibration interval:	12 months
Temperature:	+22 to +24 °C for reference temperature 0 to +50 °C for operating –20 to +71 °C for non-operating
Reliability:	MTBF = 20,000 hours
Humidity, altitude, vibration and shock:	MIL-T-28800D (Class 5)
Safety:	EN 61010-1 +/A2, Class I IEC 1010-1 +A1 +A2, Class I CAN/CSA-C22.2 No 1010.1, Class I
EMC:	EN 55011, Group 1, Class B VDE 0875, Part 11, Group 1, Class B CISPR 11, Group 1, Class B FCC Part 15J, Class A

POWER REQUIREMENTS

Line voltage operating:	90 to 264V
Line frequency:	47.5 to 63 Hz
Power consumption:	60W

DIMENSIONS and WEIGHT

Width:	323 mm (12.72 in)
Height:	147 mm (5.79 in) 132.5 mm (5.22 in) without feet (≈3HE)
Depth:	417 mm (16.42 in)
Weight:	Net 9.8 kg (21.6 lb) Shipping 11.4 kg (25.1 lb)

Values stated without tolerances are typical values

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